# Topic 6: How to Perform a Point Estimate Risk Analysis

Prerequisites

Before you can conduct a health risk analysis, you must first add your emissions data into the CEIDARS-Lite emissions inventory database within HARP and run an air dispersion analysis (See Topics 2 and 5 in the HARP How-To Guides for instructions). For more information on setting up a risk analysis, see Chapters 4 and 10 in the HARP User Guide.

Step 1. Opening the Risk Analysis Module

1. From the HARP main menu, select *Analysis*.

    - If you have completed an air dispersion analysis using representative meteorology, select *Risk Analysis (Representative Met Data)*.
    - If you have completed an air dispersion using screening meteorology data, select *Risk Analysis (Screening Met Data)*.
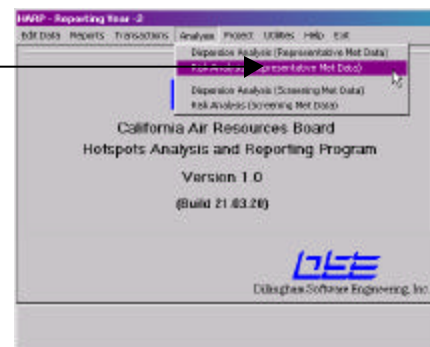
Step 2. Opening the Step-Through Window

The Step-Through window guides users through the most common functions of the risk analysis process. A user can also perform these functions directly from the top menu of the main risk window.

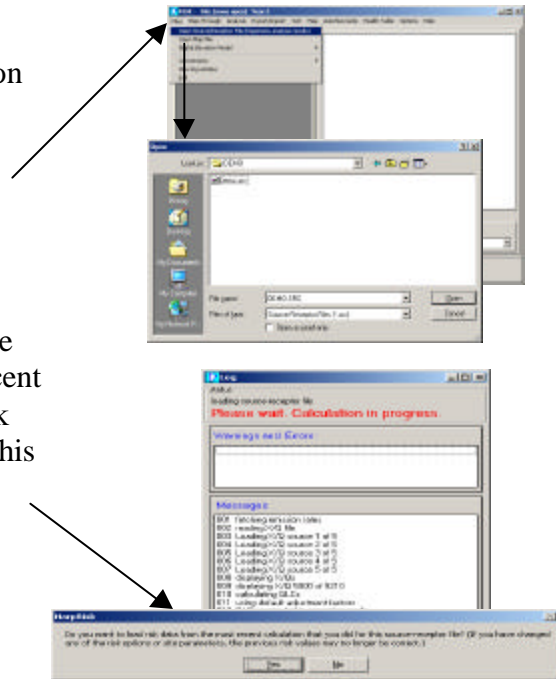1. To open the Step-Through window, click on the *Step-Through* menu item at the top of the main Risk window.
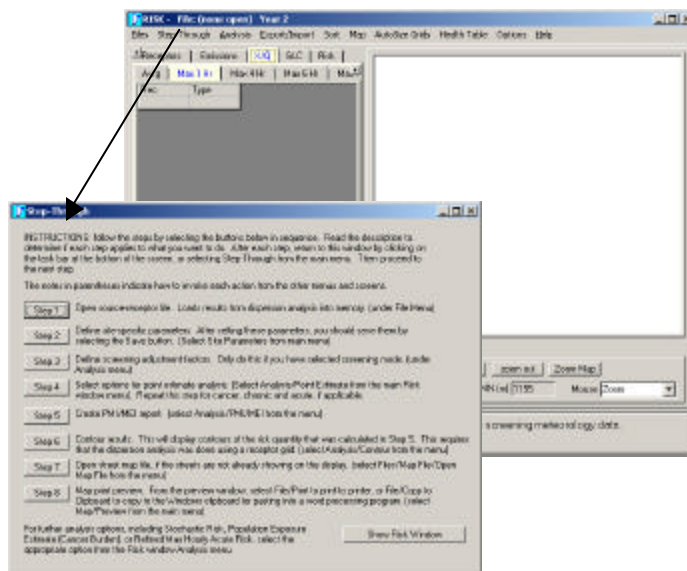
Step 3. Opening the Source/Receptor (SRC) File

The SRC file contains a list of sources and receptors used in the dispersion analysis and connects the dispersion results to the corresponding stack information in the CEIDARS-Lite database. It was created during the air dispersion analysis run and saved to your project directory (See Topic 5 in the HARP How-To Guides). The file name is the same as the ISC input, but with an "src" file extension.

1a. On the *Step-Through* window, click *Step 1*. Click on the SRC file. Click *Open*.

or

1b. From the main *Risk* window, select *File/Open Source/Receptor File (Dispersion analysis results)*. Click on the SRC file. Click *Open*.

2. If you have previously used this SRC file to calculate risk, HARP will ask if you want to load the most recent risk calculations associated with this SRC file. Click *NO*, if you are going to do more calculations using this data. Click *YES*, if the point estimate risk data calculations are complete and you are viewing, printing, or conducting a stochastic analysis.

3. HARP will automatically hide the X/Q and GLC values. To display these values, uncheck the menu item under *Options/Display GLC and X/Q Details*. When this item is checked, the GLC and X/Q values will be displayed immediately.
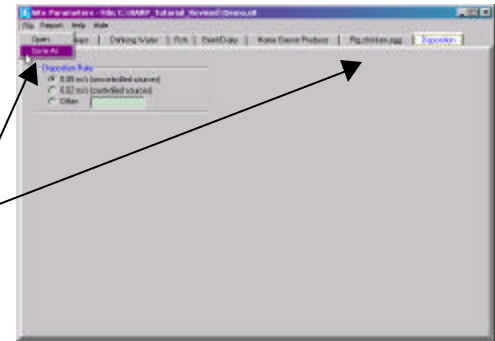
Step 4. Defining Site-Specific Parameters

1a. On the *Step-Through* window, click *Step 2*. This will open the *Site Parameters* window.

or

1b. From the main *Risk* window, select *Analysis/Define Site Parameters*. This will open the *Site Parameters* window.

2. Click on the *Enabled Pathways* tab.
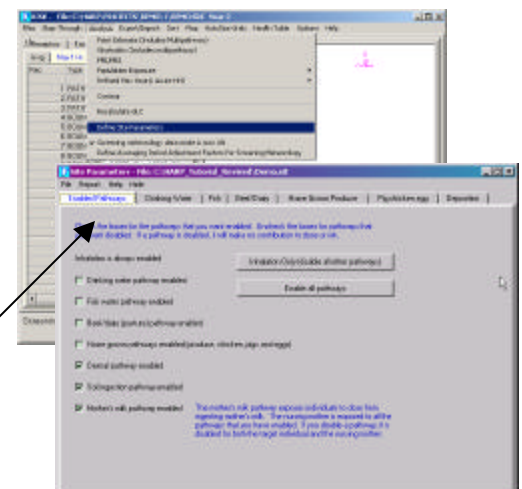
3. Place a check next to each pathway you wish to include in the point estimate risk analysis.

4. If you enable the drinking water, fish, pasture, and homegrown pathways you will need to add the required information in the corresponding tabs.

5. Choose a deposition rate under the *Deposition* tab.

6. Click *File/Save As* to save the file for future runs or click *Hide* at the top menu to use these inputs during this current HARP session only.

7. Click *Hide* to close the *Site-Specific Parameters* window.

Step 5. Defining Screening Adjustment Factor

Averaging Period Adjustment Factors are only used with screening ... you are using representative meteorology skip to Step 6.
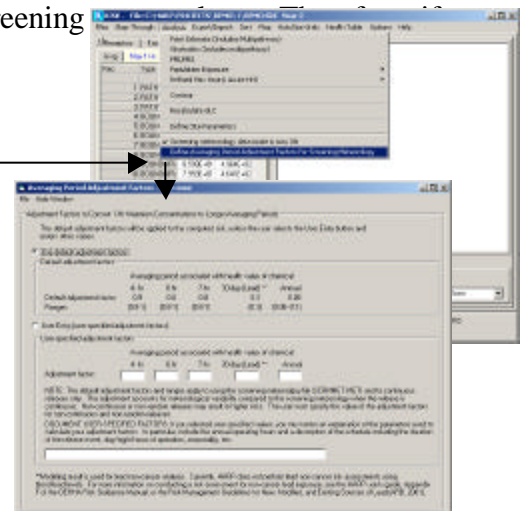
1a. On the *Step-Through* window, click *Step 3*. This will open the *Site Parameters* window.

or

1b. From the main *Risk* window, select *Analysis/ Define Averaging Period Adjustment Factors for Screening Meteorology*. This will open the *Averaging Period Adjustment Factors* window.

2. Use the default adjustment factors or enter your own under user defined. (For information on how to use the averaging period adjustment factors, see Section 9.6.2 of the User Guide.)

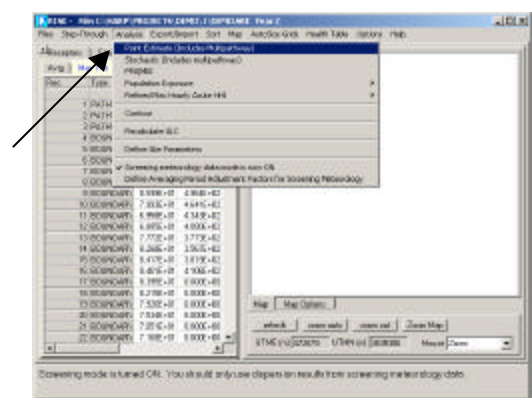3. Hide or close the *Averaging Period Adjustment Factors* window.
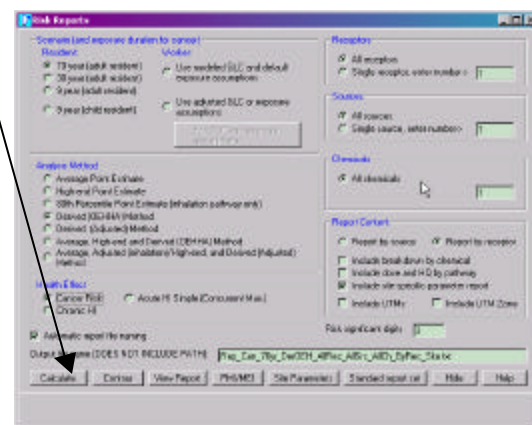
Step 6. Setting up Point Estimate Risk Analysis

1a. On the *Step-Through* window, click *Step 4*. This will open the *Risk Reports* window.

or

1b. From the main *Risk* window, select *Analysis/Point Estimate (Includes Multipathway)*. This will open the *Risk Reports* window.

2. Click on the button next to each item that you would like to include in the risk analysis.

3. Click *Calculate*. HARP will show you a preview of the report. Save the report to project directory. Close the report.

4. At this point, the risk values will be added to the data view window. Click on the risk tab on the right side of the main risk window. The cancer, chronic, and acute risk values will be displayed. If no value has been calculated a –1.00E+00 will be displayed for each receptor.

5. Repeat steps 2-3 for all other scenarios you wish to calculate

Step 7. Creating a PMI/MEI Report

If you don't wish to create a PMI/MEI report, skip to Step 8.

1a. On the *Step-Through* window, click *Step 5*. This will open the *PMI/MEI Report* window.

or

1b. From the main *Risk* window, select *Analysis/PMI/MEI*. This will open the *PMI/MEI Report* window.

or

1c. From the *Risk Reports* window, click on the *PMI/MEI* button. This will open the *PMI/MEI Report* window.

2. Place a check next to each health effect (cancer, chronic, acute) you wish to include. Verify the number of values you want in the report, and the file name.

3. Click *Generate Report*. HARP will show you a preview of the report. Save the report to your project directory. Close the Report. Then close the *PMI/MEI Report* window.
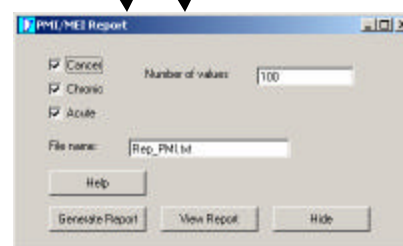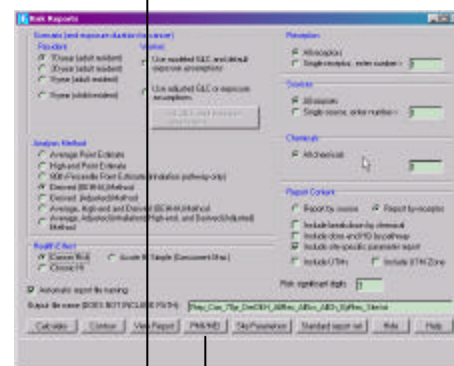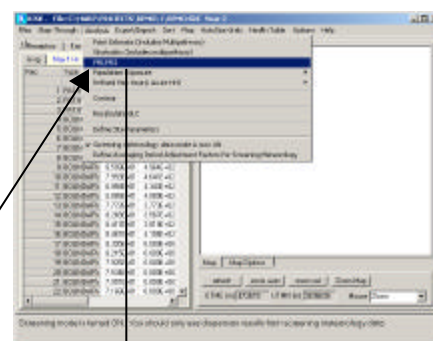
Step 8. Creating a Contour

1a. On the *Step-Through* window, click *Step 6*. This will open the *Contour* window.

or

1b. From the main *Risk* window, select *Analysis/Contour*. This will open the *Contour* window.

or

1c. From the *Risk Reports* window, click on the *Contour* button. This will open the *Contour* window.

2.a   Automatic Settings: The automatic settings will create contours that bound the risk data between the highest risk value and zero. The number of contours that you define will divide the risk results into evenly spaced intervals between these two points.

Select the button next to *Use automatic settings*. Select *Cancer Risk* to contour the cancer risk. Click *Calculate Contours*. The mapped results will appear on the *Risk* window.

2.b   Manual Settings: To manually identify the contours, check the box *Use Manual Setting*. The number of contours should be one number greater than the number of intervals that you want your data divided into (i.e., if 5 intervals of data is desired, enter 6 contours).

For example, if you want to see just two isopleths at 1 and 10 chances per million: Set the *Max. Contour Value* to 10 and the Set *Min. Contour Value* to 1, and set *Number of Contours* to 2. Click *Calculate Contours*. The contours will be displayed on the map when the calculation is done.

or

If you want to see multiple isopleths at 1, 10, 100, and 1000 chances per million: Set the *Max. Contour Value* to 1000 and the Set *Min. Contour Value* to 1, and set *Number of Contours* to 4 and check the log scale box. Click *Calculate Contours*. The contours will be displayed on the map when the calculation is done.
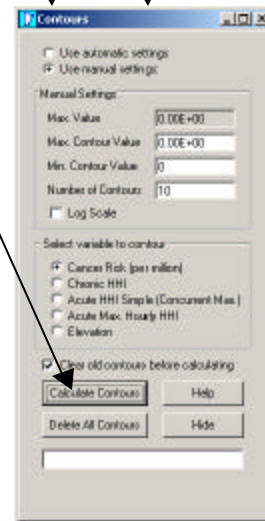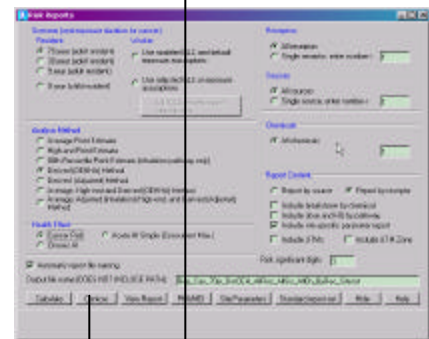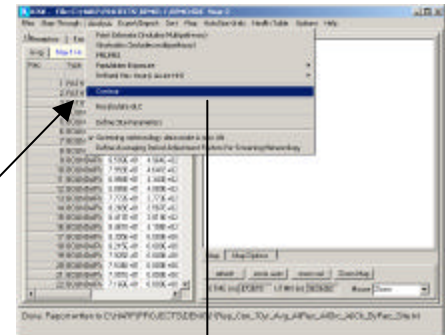
Important Notes on Contours

- The contour isopleths can only be generated using **grid receptors**.

- HARP will plot the last risk that was calculated. If you choose to run a risk analysis for "average, high-end and derived", the risk contours that will be plotted will be for "derived". If you run the OEHHA standard report set, HARP will plot the 70-year, cancer, derived (adjusted) scenario from Report #19.

- HARP plots cancer risk contours in units of "chances per million". Hazard Indices for non-cancer results are shown as actual Hazard Index Values.

- If HARP will not calculate the contours, there may not be enough data. At least three points of data (grid receptors) at that contour range are needed to make an isopleth. You should also look at your risk data to confirm that your maximum and minimum contour values are within the range of your data or you may need to rerun the dispersion analysis with smaller grid spacing.

Step 9. Opening a Street Map

1a. On the *Step-Through* window, click *Step 7*. Browse to the map you wish to load. Click *Open* button.

or

1b. From the main *Risk window*, select *Files/Open Map File*. Browse to the map you wish to load. Click *Open* button.